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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,737	05/04/2001	Qian Huang	8828-053-999	8082

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EXAMINER

DESTA, ELIAS

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/849,737

Applicant(s)

HUANG ET AL.

Examiner

Elias Desta

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16 is/are allowed.
- 6) ☒ Claim(s) ✓ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## Detailed Action

### Drawing

1. The drawing is objected to because of the following minor informalities:
  - Fig. 4: Blank boxes in the drawings (e.g., 404-416) should be labeled as to function.

### Claim rejection – 35 U.S.C. 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by a new and useful improvement or a well-established utility.

In reference to claims 1-16: the process of obtaining the distance between probability density functions is claimed as an abstract idea without reduction to a practical application. A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See *In re Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed.Cir. 1994); see also *In re Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459.

### Claim rejection – 35 U.S.C. 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for

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patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-16 are rejected under 35 U.S.C. 102(e) as anticipated by Beigi et al. (U.S. Patent 6,246,982).

In reference to claims 1, 5 and 9: Beigi et al. teaches a method of computing a distance measure between multiple mixtures type probability distribution functions (see Beigi et al., Figs. 1-3 and Abstract). The method includes the steps of evaluating a joint distribution function (see Beigi et al., Figs. 4A and 4B, and column 2, lines 32-37). As the sum value of  $\mu_l$  and  $\gamma_k$  over the range of  $l=1$  to  $N$  and  $k=1$  to  $K$  equate to a value one is simply showing that the outcome of the sum of probability of events is always one.

With regard to claims 2, 6 and 10: as noted above in claims 1, 5 and 9, Beigi et al. further teaches that the first and second mixture probability density functions includes a Gaussian Mixture Model (see Beigi et al., Figs. 4A and 4B).

With regard to claims 3, 7 and 11: as noted above in claims 1, 5 and 9, Beigi et al. further teaches that the element distance between the first and second probability distance functions includes Kullback Leibler Distance (see Beigi et al., column 5, lines 21-34).

With regard to claims 4, 8 and 12: as noted above in claims 1, 5 and 9, Beigi et al. further shows that the first and second probability distribution functions are Gaussian mixture models derived from audio segments (see Beigi et al., Fig. 1).

In reference to claim 13: as discussed in claim 1, Beigi et al. teaches a method for computing a distance between first and second mixture type probability distribution functions (see Beigi et al., column 5,

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line 48 to column 6, line 17). Similar to the claimed invention, Beigi et al. shows that  $W_A$  and  $W_M$  are the weighted factors in determining the overall distance. Further in Fig. 3, Beigi et al. shows that the inner collection distance is a weighted sum of distances between two or more Gaussian mixture probability distribution functions.

With regard to claim 14: as noted above in claim 13, Beigi et al. further teaches that the first and second mixture probability density functions include a Gaussian Mixture Model (see Beigi et al., Figs. 4A and 4B).

With regard to claim 15: as noted above in claim 13, Beigi et al. further teaches that the element distance between the first and second probability distance functions includes Kullback Leibler Distance (see Beigi et al., column 5, lines 21-34).

With regard to claim 16: as noted above in claim 13, Beigi et al. further shows that the first and second probability distribution functions are Gaussian mixture models derived from audio segments (see Beigi et al., Fig. 1).

## Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant disclosure:
- Yamada et al. (U.S. Patent 5,706,391): discloses method and apparatus for processing information.
  - Do, discloses a fast algorithm to approximate the Kullback-Leibler distance (KLD) between two dependence tree models.
  - Zhang et al. discloses an improved training procedure in a HMM (Hidden Markov Model)/VQ (Vector Quantization) speech recognition system for speaker independent speech recognition.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (703)-305-3840. The examiner can normally be reached on M-Thu (8:00-6:30).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)-308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-5841 for regular communications and (703)-308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.

Elias Desta  
Examiner  
Art Unit 2857

-ed

October 24, 2002

  
MARC S. HOFF  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800